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TELEFAX CONTROL SHEET

SENT TO:

Examiner Ogunbiyi

DATE SENT:

December 2, 2011

SUBJECT:

US app. no. 10/590,896

No. of pages (including this cover sheet):

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FROM:

Allen Yun

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Sequence#7 : modified

Gene : *Erysipelothrix rhusiopathiae* spaA gene, partial cds, strain: SE-9

Sequence length: 1748 base pairs

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xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx 48
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1           5           10          15

xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx 96
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20          25          30

xxx xxx xxx xtg att cca cta atc ggt gaa caa gtt gga ttg ctc cca 144
Xaa Xaa Xaa Xaa Ile Pro Leu Ile Gly Glu Gln Val Gly Leu Leu Pro
35          40          45

gtt tta cct ggg aca ggg ata cat gct cag gaa tac aac aaa atg act 192
Val Leu Pro Gly Thr Gly Ile His Ala Gln Glu Tyr Asn Lys Met Thr
50          55          60

206
gat got tat att gaa aat ttg gta tot cta att aat caa aaa gtg aag 240
Asp Ala Tyr Ile Glu Asn Leu Val Ser Leu Ile Asn Gln Lys Val Lys
65          70          75          80

cgg ttt ctt ata aat gaa cca aag ggg tac caa agt ttc gaa gca gtg 288
Pro Phe Leu Ile Asn Glu Pro Lys Gly Tyr Gln Ser Phe Glu Ala Val
85          90          95

aat gaa gag att aac tog att gta agt gaa ott aaa cat gaa gga atg 336
Asn Glu Glu Ile Asn Ser Ile Val Ser Glu Leu Lys His Glu Gly Met
100         105         110

agt ctt caa aac att cac cat atg ttt aaa caa ago atc caa aac cta 384
Ser Leu Gln Asn Ile His His Met Phe Lys Gln Ser Ile Gln Asn Leu
115         120         125

gca act aga atc ggc tac aga agt ttt atg cag gat got atg tat ctt 432
Ala Thr Arg Ile Gly Tyr Arg Ser Phe Met Glu Asp Ala Met Tyr Leu
130         135         140

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461

gaa aat ttt gaa aga tta aag att oot gaa ctt gat gaa gca tac gtt 480
 Glu Asn Phe Glu Arg Leu Thr Ile Pro Glu Leu Asp Glu Ala Tyr Val
 145 150 155 160

608

gaa gat aaa gtt aaa ggt aga got oca tta gaa gca ttt ata gtt oot 576
 Glu Asp Lys Val Lys Gly Arg Ala Pro Leu Glu Ala Phe Ile Val Pro
 180 185 190

608

cta aga aat aga att cgt agt atg aat gaa ggt got gca gaa gta aat 624
 Leu Arg Asn Arg Ile Arg Ser Met Asn Glu Ile Ala Ala Glu Val Asn
 195 200 205

642

tat tta oot gaa gcg cat gag gat tto tta gtt toa gat toa ago gag 672
 Tyr Leu Pro Glu Ala His Glu Asp Phe Leu Val Ser Asp Ser Ser Glu
 210 215 220

758

ago gag ttt att gao tat aac ogg ctc gaa aat atg atg gaa aaa gaa 768
 Ser Glu Phe Ile Asp Tyr Asn Arg Leu Glu Asn Met Met Glu Lys Glu
 245 250 255

833

att caa gtt gta aga ggt gta tat caa aac ttg gaa cgt gcg aac gcg 864
 Ile Gln Val Val Arg Asp Val Tyr Pro Asn Leu Glu Arg Ala Asn Ala
 275 280 285

912

ggt gtt gaa toc tta aag aca att aaa gat eta aaa caa aga gag aag 912
 Val Val Glu Ser Leu Lys Thr Ile Lys Asp Ile Lys Gln Arg Glu Lys
 290 295 300

| | |
|---|------|
| aaa cta cag gaa ctt ctt gaa att tat atc caa aga agt gga gat gtt Lys Leu Gln Glu Leu Leu Glu Ile Tyr Ile Gln Arg Ser Gly Asp Val 305 310 315 320 | 960 |
| oga aaa oca gat gta otc caa oga ttt att gga aaa tat caa tca gta Arg Lys Pro Asp Val Leu Gln Arg Phe Ile Gly Lys Tyr Gln Ser Val 325 330 335 | 1008 |
| gtt gat gaa gaa aaa aat aaa ctt caa gat tat tta gaa tca gat att Val Asp Glu Glu Lys Asn Lys Leu Gln Asp Tyr Leu Glu Ser Asp Ile 340 345 350 | 1056 |
| ttt gat tca tat agt gtg gat ggo gag aaa ata aga aat aaa gaa att Phe Asp Ser Tyr Ser Val Asp Gly Glu Lys Ile Arg Asn Lys Glu Ile 355 360 365 | 1104 |
| aca otc atc aat aga gat gca taa tta tct atg att taa aga gct caa Thr Leu Ile Asn Arg Asp Ala Tyr Leu Ser Met Ile Tyr Arg Ala Gln 370 375 380 | 1152 |
| tgg att tog gaa att aag acg att ogt gca gat tta gaa tca ctt gtc Ser Ile Ser Glu Ile Lys Thr Ile Arg Ala Asp Leu Glu Ser Leu Val 385 390 395 400 | 1200 |
| aaa tca ttc caa aat gaa gaa agt gat tct aaa gta gag otc gaa agt Lys Ser Phe Gln Asn Glu Glu Ser Asp Ser Lys Val Glu Pro Glu Ser 405 410 415 | 1248 |
| ccc gtt aaa gta gaa aaa oca gtt gat aaa gaa aaa cct aaa gat caa Pro Val Lys Val Glu Lys Pro Val Asp Lys Glu Lys Pro Lys Asp Gln 420 425 430 | 1296 |
| aag aag oca gtt gat caa tca aaa ccc gaa tog aat tca aaa gaa ggg Lys Lys Pro Val Asp Gln Ser Lys Pro Glu Ser Asn Ser Lys Glu Gly 435 440 445 | 1344 |
| tgg att aag aaa gat aat aag tgg ttc tat att gag aaa tca ggt gga Trp Ile Lys Lys Asp Asn Lys Trp Phe Tyr Ile Glu Lys Ser Gly Gly 450 455 460 | 1392 |

| | |
|--|------|
| aat gca aca gga tgg aag aag gta gga gac aaa tgg tac tac ctc gat | 1440 |
| Met Ala Thr Gly Trp Lys Lys Val Gly Asp Lys Trp Tyr Tyr Leu Asp | |
| 465 470 475 480 | |
| | |
| aat acg ggt gct atg gtt acg ggt tgg aag aag gta gca aac aaa tgg | 1488 |
| Asn Thr Gly Ala Met Val Thr Gly Trp Lys Lys Val Ala Asn Lys Trp | |
| 485 490 495 | |
| | |
| tac tac ctt gaa aac tca ggt gcg atg gca aca gga tgg aag aaa gta | 1536 |
| Tyr Tyr Leu Glu Asn Ser Gly Ala Met Ala Thr Gly Trp Lys Lys Val | |
| 500 505 510 | |
| | |
| tca aac aag tgg tac tac ctt gaa aac tca ggt gcg atg gca aca gga | 1584 |
| Ser Asn Lys Trp Tyr Tyr Leu Glu Asn Ser Gly Ala Met Ala Thr Gly | |
| 515 520 525 | |
| 1591 | |
| tgg aag <u>ala</u> gta tca aac aag tgg tac tac ctt gaa aat tca gcc gca | 1632 |
| Trp Lys <u>Arg</u> Val Ser Asn Lys Trp Tyr Tyr Leu Glu Asn Ser Gly Ala | |
| 530 535 540 | |
| | |
| atg gct aca gga tgg aaa aag gta gca aac aaa tgg tac tac ctt gaa | 1680 |
| Met Ala Thr Gly Trp Lys Lys Val Ala Asn Lys Trp Tyr Tyr Leu Glu | |
| 545 550 555 560 | |
| | |
| aac tca ggt gcg atg gca aca gga tgg aag aaa gta tcg aac aag tgg | 1728 |
| Asn Ser Gly Ala Met Ala Thr Gly Trp Lys Lys Val Ser Asn Lys Trp | |
| 565 570 575 | |
| | |
| tac tac ctt gaa aac tca gcc gca atg gca acg ggt tgg aag aaa ata | 1776 |
| Tyr Tyr Leu Glu Asn Ser Gly Ala Met Ala Thr Gly Trp Lys Lys Ile | |
| 580 585 590 | |
| | |
| gca aat aaa tgg tac tac ctt gat aaa tca gga atg atg gtt aca ggt | 1824 |
| Ala Asn Lys Trp Tyr Tyr Leu Asp Lys Ser Gly Met Met Val Thr Gly | |
| 595 600 605 | |
| | |
| tca aaa tct att gat ggt aaa aag tat gca | 1854 |
| Ser Lys Ser Ile Asp Gly Lys Lys Tyr Ala | |
| 610 615 | |